

Quasi-Kähler Chern-flat manifolds and complex 2-step nilpotent Lie algebras

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Abstract. The study of quasi-Kähler Chern-flat almost Hermitian manifolds is strictly related to the study of anti-bi-invariant almost complex Lie algebras. In the present paper we show that quasi-Kähler Chern-flat almost Hermitian structures on compact manifolds are in correspondence to complex parallelisable Hermitian structures satisfying the second Gray identity. From an algebraic point of view this correspondence reads as a natural correspondence between anti-bi-invariant almost complex structures on Lie algebras and bi-invariant complex structures. Some natural algebraic problems are approached and some exotic examples are carefully described.

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